

CLAIMS

1. An information signal processing apparatus
connected to a communication control network,

5 characterized by comprising:

reset reception means for, upon issuing an update
request when a network configuration must be updated in
a remote network other than the communication control
network connected to the information signal processing
10 apparatus, receiving network specifying information for
the issued update request, and a network update
notification.

2. The apparatus according to claim 1, characterized
in that said reset reception means uses a predetermined
15 address as a register, detects write of the network
specifying information at the address, and receives a
network update occurrence notification of the remote
network.

3. The apparatus according to claim 1, characterized
20 in that the communication control network includes a
communication control bus complying with IEEE 1394.

4. The apparatus according to claim 3, characterized
in that a predetermined register is arranged in a core
CSR architecture register space in an address space of
25 the information signal processing apparatus connected
to each communication control bus complying with IEEE
1394.

5. The apparatus according to claim 3, characterized in that a predetermined register is arranged in a serial bus register space in an address space of the information signal processing apparatus connected to each communication control bus complying with IEEE 1394.

6. An information signal processing method in an IEEE 1394 bus system in which a plurality of information signal processing apparatuses are connected via a communication control network, characterized by comprising:

the step of, upon issuing an update request when a network configuration must be updated in a remote network other than the communication control network connected to the information signal processing apparatuses, receiving network specifying information for the issued update request, and a network update notification.

7. The method according to claim 6, characterized by further comprising the step of using a predetermined address as a register, detecting write of the network specifying information at the address, and receiving a network update occurrence notification of the remote network.

8. The method according to claim 6, characterized in that the communication control network includes a communication control bus complying with IEEE 1394.

9. An information signal processing method in an

IEEE 1394 bus system in which a plurality of information signal processing apparatuses are connected via a communication control bus complying with IEEE 1394, characterized by comprising the step of:

- 5 notifying occurrence of remote bus reset when a plurality of buses are connected via a bridge, and bus reset occurs on a remote bus other than a connected bus.

- 10 10. The method according to claim 9, characterized in that a bridge connected to a bus on which bus reset occurs notifies an information signal processing apparatus connected to another connected bus of a remote bus reset occurrence notification containing bus specifying information for occurrence of bus reset.

- 15 11. An information communication system connectable to a serial bus via a serial bridge, characterized in that

the serial bridge comprises:

at least two portals respectively connected to different serial buses;

- 20 a registration table for registering serial bus specifying information and information of a connected node for each connected serial bus;

monitoring means for monitoring bus reset on the serial bus connected to each portal; and

- 25 re-registration means for, when said monitoring means detects bus reset, rewriting contents of the registration table corresponding to the serial bus on

which bus reset is detected in accordance with newly updated node information, and

a change in system configuration can be recognized by updating the registration table.

- 5 12. The system according to claim 11, characterized in that the serial bus specifying information includes a bus ID assigned to each bus, and the node information includes a node ID assigned to each node.

- 10 13. The system according to claim 12, characterized in that the registration table registers, for each bus, all node IDs connected to the bus in association with a bus ID.

14. The system according to claim 11, characterized in that

- 15 the serial bridge further comprises communication management means for managing a communication state of a node connected to the connected serial bus, and

when said monitoring means detects bus reset, said monitoring means notifies, of re-registration, a node rewritten by said re-registration means and a node having a communication state managed by said communication management means.

15. The system according to claim 14, characterized in that

- 25 said communication management means comprises a communication state write portion in which a node communication state can be written for each node

connected to the bus, and

said communication management means manages the node communication state by writing information of a communication partner node in the communication state

5 write portion.

16. The system according to claim 15, characterized in that

the system further comprises confirmation means capable of confirming occurrence of bus reset on a bus
10 connected to the communication partner node from the node connected to the serial bus, and

if a node written when said re-registration means detects rewrite of the re-registration table in correspondence with detection of bus reset by said
15 monitoring means corresponds to the node having the communication state managed by said communication management means, said confirmation means rewrites node information of said communication management means in correspondence with re-registration, thereby enabling
20 confirming occurrence of bus reset on the bus connected to the communication partner node.

17. The system according to claim 11, characterized in that the serial bridge comprises:

notification request reception means for
25 receiving a notification request to a communication partner node from a node connected to a bus on which bus reset has occurred; and

notification means for notifying the communication partner node in accordance with the notification request from said notification request reception means.

5 18. The system according to claim 11, characterized in that the serial bus includes an IEEE 1394 bus complying with IEEE 1394, and the serial bridge includes an IEEE 1394 bridge complying with IEEE 1394.

10 19. An information communication method in an information communication system connectable via a serial bridge having portals respectively connected to different serial buses and a registration table for registering node information, characterized by comprising the steps of:

15 registering information of a connected node in addition to serial bus specifying information in the registration table for each serial bus connected to the serial bridge, monitoring bus reset on the serial bus connected to each portal, when bus reset is detected, 20 rewriting, in accordance with newly updated node information, contents of the registration table corresponding to a serial bus on which bus reset is detected, and updating the registration table, thereby enabling recognizing a change in system configuration.

25 20. The method according to claim 19, characterized in that the serial bus specifying information includes a bus ID assigned to each bus, and the node information

includes a node ID assigned to each node.

21. The method according to claim 20, characterized in that the registration table registers, for each bus, all node IDs connected to the bus in association with a bus ID.

22. The method according to claim 19, characterized by further comprising the step of, when the serial bus detects a bus reset, notifying a node, which communicates with a node connected to the serial bus on which the bus reset is detected, of the bus reset on the bus connected to the communication partner node.

23. The method according to claim 22, characterized in that the node connected to the serial bus registers a node communication state capable of specifying a communication partner in a serial bridge corresponding to the bus during communication with another node, thereby enabling managing the node communication state.

24. The method according to claim 23, characterized in that the serial bridge rewrites, in accordance with a state after bus reset, a registration communication state of the node which communicates with the node connected to the bus on which a bus reset has occurred, thereby enabling the connected node to confirm occurrence of the bus reset on the bus connected to the communication partner node.

25. The method according to claim 19, characterized in that the serial bus includes an IEEE 1394 bus

complying with IEEE 1394, and the serial bridge includes an IEEE 1394 bridge complying with IEEE 1394.

26. An information communication system having a first communication control network capable of

5 connecting communication devices via a serial bus, a second communication network capable of connecting communication devices via a serial bus different from the serial bus of the first communication control network, and a connection device for enabling

10 communication between the first and second communication control networks, characterized in that

the connection device comprises:

interpretation means for interpreting an upper protocol used by communication between a first

15 communication device connected to the first communication control network and a second communication device connected to the second communication control network; and

proxy means for performing, instead of the second communication device, processing which should be performed by the second communication device when a network configuration must be updated in the first communication control network, and

the first and second communication devices can
25 communicate with each other regardless of a network update request in the first communication control network.

27. The system according to claim 26, characterized in that the serial bus includes a communication control bus complying with IEEE 1394, and the connection device includes an IEEE 1394 bridge complying with IEEE 1394.

- 5 28. An information communication system including a first serial bus connected to a connection device, a first node connected to the first serial bus, a second serial bus different from the first serial bus, and a second node connected to the second serial bus, the first and second nodes being able to communicate with each other, characterized in that
- the connection device comprises:
- interpretation means for interpreting an upper protocol used by communication between the first and
- 15 second nodes; and
- proxy means for performing, instead of the second node, processing which should be performed by the second node when bus reset occurs on the first serial bus, and

- 20 when bus reset occurs on the first serial bus, the connection device performs processing which should be performed upon occurrence of bus reset between the first node and the connection device, thereby performing communication between the first and second
- 25 nodes regardless of bus reset on the first serial bus.
29. The system according to claim 28, characterized in that the serial bus includes a communication control

bus complying with IEEE 1394, and the connection device includes an IEEE 1394 bridge complying with IEEE 1394.

30. An information communication method in an information communication system having a first
- 5 communication control network capable of connecting communication devices via a serial bus, a second communication network capable of connecting communication devices via a serial bus different from the serial bus of the first communication control
- 10 network, and a connection device for enabling communication between the first and second communication control networks, characterized in that the connection device interprets an upper protocol used by communication between a first
- 15 communication device connected to the first communication control network and a second communication device connected to the second communication control network, and performs, instead of the second communication device, processing which
- 20 should be performed by the second communication device when a network configuration must be updated in the first communication control network, thereby enabling communication between the first and second communication devices regardless of a network update
- 25 request in the first communication control network.
31. The method according to claim 30, wherein the serial bus includes a communication control bus

complying with IEEE 1394, and the connection device includes an IEEE 1394 bridge complying with IEEE 1394.

32. A computer-readable storage medium which stores a computer program for realizing a reset reception function of, upon issuing an update request when a network configuration must be updated in a remote network other than a communication control network connected to an information signal processing apparatus connected to the communication control network, receiving network specifying information for the issued update request, and a network update notification.

33. The medium according to claim 32, characterized in that the reset reception function uses a predetermined address as a register, detects write of the network specifying information at the address, and receives a network update occurrence notification of the remote network.

34. A computer-readable storage medium incorporated in a bridge that realizes a function of, when a plurality of buses of IEEE 1394 bus systems connected to a plurality of information signal processing apparatuses via communication control buses complying with IEEE 1394 are connected via bridges, and bus reset occurs on a remote bus other than the connected buses, notifying information signal processing apparatuses connected to other buses connected via bridges connected to the buses of occurrence of remote bus

reset containing bus specifying information for occurrence of the bus reset.

35. A computer-readable storage medium incorporated in a connection device of an information communication system having a first communication control network capable of connecting communication devices via a serial bus, a second communication network capable of connecting communication devices via a serial bus different from the serial bus of the first communication control network, and the connection device for enabling communication between the first and second communication control networks, wherein said medium stores computer program streams for realizing an interpretation function of interpreting an upper protocol used by communication between a first communication device connected to the first communication control network and a second communication device connected to the second communication control network, and a proxy function of performing, instead of the second communication device, processing which should be performed by the second communication device when a network configuration must be updated in the first communication control network, and for realizing communication between the first and second communication devices regardless of a network update request in the first communication control network.

36. A computer-readable storage medium incorporated in a connection device of an information communication system including a first serial bus connected to the connection device, a first node connected to the first
 5 serial bus, a second serial bus different from the first serial bus, and a second node connected to the second serial bus, the first and second nodes being able to communicate with each other, wherein said medium stores computer program streams for realizing an
 10 interpretation function of interpreting an upper protocol used by communication between the first and second nodes, and a proxy function of performing, instead of the second node, processing which should be performed by the second node when bus reset occurs on
 15 the first serial bus, and for enabling communication between communication between the first and second nodes regardless of bus reset on the first serial bus by performing processing which should be performed upon occurrence of bus reset between the first node and the
 20 connection device when bus reset occurs on the first serial bus.

37. A computer-readable storage medium incorporated in a connection device of an information communication system having a first communication control network
 25 capable of connecting communication devices via a serial bus, a second communication network capable of connecting communication devices via a serial bus

different from the serial bus of the first communication control network, and a connection device for enabling communication between the first and second communication control networks, wherein said medium

5 stores computer program streams for interpreting an upper protocol used by communication between a first communication device connected to the first communication control network and a second communication device connected to the second

10 communication control network, and performing, instead of the second communication device, processing which should be performed by the second communication device when a network configuration must be updated in the first communication control network, thereby enabling

15 communication between the first and second communication devices regardless of a network update request in the first communication control network.

38. A serial bus bridge having at least two portals respectively connected to different serial buses,

20 wherein each of said portals characterized by comprising:

detecting means for detecting a bus reset of a serial bus to which the portal is connected;

storage means for storing ID information

25 designating a node on a network which comprises a plurality of serial buses, including serial buses to which said portals are connected, interconnected via

serial bus bridge(s);

receiving means for receiving a control message including the ID information designating a node on the network, wherein said control message further includes
 5 a registration command or a deletion command;

wherein each of the portals stores the ID information in the control message into the storage means if received control message includes the registration command, deletes the ID information stored
 10 in the storage means if received control message includes the deletion command; and

a transmitting means for transmitting a notice message including a bus ID information, designating a serial bus in which the detecting means detected a bus
 15 reset, to the node which is designated by the ID information stored in the storage means.

39. A terminal apparatus operable as a node on a network which comprises a plurality of serial buses interconnected via serial bus bridge(s), characterized
 20 in that said terminal apparatus transmits said control message, including an ID information which designates a node on the network, to the portal of the serial bus bridge according to claim 38.

40. A terminal apparatus operable as a node on a
 25 network which comprises a plurality of serial buses interconnected via serial bus bridge(s), characterized by said terminal apparatus receives a control message,

including bus ID information which designates a serial bus, from the portal of the serial bus bridge according to claim 38.

41. An information communicating system characterized
5 by comprising:

a network comprising a plurality of serial buses interconnected via serial bus bridge(s);

a serial bus bridge according to claim 38;

a terminal apparatus according to claim 39; and

- 10 a terminal apparatus according to claim 40.

42. An information communicating system, wherein communication is performed between a first terminal apparatus operable as a first node connected to a first serial bus included in a network comprising a plurality
15 of serial buses connected via serial bus bridge(s), and a second terminal apparatus operable as a second node connected to a second serial bus which is different from said first serial bus, characterized in that

- the first serial bus is connected to a serial bus
20 bridge according to claim 38;

the first terminal apparatus is a terminal apparatus according to claim 39;

the second terminal apparatus is a terminal apparatus according to claim 40;

- 25 the first terminal apparatus transmits, when it starts communicating, a control message including an ID information, designating the second node and the

registration command, to a portal connected to the first serial bus within portals of the serial bus bridge, and transmits, when it terminates communicating, a control message including an ID information,

- 5 designating the second node and the deletion command, to a portal connected to the first serial bus within portals of the serial bus bridge; and

the portal, during the communication between the first and the second terminal apparatus, stores the ID

- 10 information designating the second node into the storage means, and transmits a notice message including a bus ID information designating the first serial bus to the second terminal apparatus when the detecting means detects a bus reset of the first serial bus.

- 15 43. An information communicating system, wherein communication is performed between a first terminal apparatus operable as a first node connected to a first serial bus included in a network comprising a plurality of serial buses connected via serial bus bridge(s), and
- 20 a second terminal apparatus operable as a second node connected to a second serial bus which is different from said first serial bus, characterized in that

the second serial bus is connected to a serial bus bridge according to claim 38;

- 25 the first terminal apparatus is a terminal apparatus according to claim 39 and claim 40;

the first terminal apparatus transmits, when it

starts communicating, a control message including an ID information, designating the first node and the registration command, to a portal connected to the second serial bus within portals of the serial bus bridge, and transmits, when it terminates communicating, a control message including an ID information, designating the first node and the deletion command, to a portal connected to the second serial bus within portals of the serial bus bridge; and

- 10 the portal, during the communication between the first and the second terminal apparatus, stores the ID information designating the first node into the storage means, and transmits a notice message including a bus ID information designating the second serial bus to the
- 15 first terminal apparatus when the detecting means detects a bus reset of the second serial bus.

44. A serial bus bridge according to claim 38, characterized in that the serial buses complying with IEEE 1394.

- 20 45. A terminal apparatus according to claim 39, characterized in that the serial buses complying with IEEE 1394.

46. A terminal apparatus according to claim 40, characterized in that the serial buses complying with

- 25 IEEE 1394.

47. An information communicating system according to any one of claims 41 to 43, characterized by the serial

buses complying with IEEE 1394.

48. An information communicating method of an information communicating system, wherein communication is performed between a first terminal apparatus

- 5 operable as a first node connected to a first serial bus included in a network comprising a plurality of serial buses connected via serial bus bridge(s), and a second terminal apparatus operable as a second node connected to a second serial bus which is different
- 10 from said first serial bus, characterized in that the first serial bus is connected to a serial bus bridge according to claim 38;

the first terminal apparatus is a terminal apparatus according to claim 39;

- 15 the second terminal apparatus is a terminal apparatus according to claim 40;

wherein said method comprising the steps of:

- a step wherein the first terminal apparatus transmitting, when it starts communicating, a control
- 20 message including an ID information, designating the second node and the registration command, to a portal connected to the first serial bus within portals of the serial bus bridge;

- a step wherein the first terminal apparatus
- 25 transmitting, when it terminates communicating, a control message including an ID information, designating the second node and the deletion command,

to a portal connected to the first serial bus within portals of the serial bus bridge; and

- a step wherein the portal, during the communication between the first and the second terminal apparatus, storing the ID information designating the second node into the storage means, and transmitting a notice message including a bus ID information designating the first serial bus to the second terminal apparatus when the detecting means detects a bus reset of the first serial bus.

49. An information communicating method of an information communicating system, wherein communication is performed between a first terminal apparatus operable as a first node connected to a first serial bus included in a network comprising a plurality of serial buses connected via serial bus bridge(s), and a second terminal apparatus operable as a second node connected to a second serial bus which is different from said first serial bus, characterized in that

- the second serial bus is connected to a serial bus bridge according to claim 38;

the first terminal apparatus is a terminal apparatus according to claims 39 and 40;

wherein said method comprising the steps of:

- a step wherein the first terminal apparatus transmitting, when it starts communicating, a control message including an ID information, designating the

first node and the registration command, to a portal connected to the second serial bus within portals of the serial bus bridge;

- a step wherein the first terminal apparatus transmitting, when it terminates communicating, a control message including an ID information, designating the first node and the deletion command, to a portal connected to the second serial bus within portals of the serial bus bridge; and
- 10 a step wherein the portal, during the communication between the first and the second terminal apparatus, storing the ID information designating the first node into the storage means, and transmitting a notice message including a bus ID information
- 15 designating the second serial bus to the first terminal apparatus when the detecting means detects a bus reset of the second serial bus.
50. An information communication system connectable to a serial bus via a serial bridge, characterized in
- 20 that

the serial bridge comprises:

at least two portals respectively connected to different serial buses;

- a registration table for registering serial bus designating information and information of a connected node for each connected serial bus;
- 25

monitoring means for monitoring bus reset on the

serial bus connected to each portal; and

re-registration means for, when said monitoring means detects bus reset, rewriting contents of the registration table corresponding to the serial bus on

5 which bus reset is detected in accordance with newly updated node information, and

a change in system configuration can be recognized by updating the registration table.

51. The system according to claim 50, characterized
10 in that the serial bus designating information includes a bus ID assigned to each bus, and the node information includes a node ID assigned to each node.

52. The system according to claim 51, characterized
in that the registration table registers, for each bus,
15 all node IDs connected to the bus in association with a bus ID.

53. The system according to any one of claims 50 to 52, characterized in that

the serial bridge further comprises communication
20 management means for managing a communication state of a node connected to the connected serial bus, and

when said monitoring means detects bus reset, said monitoring means notifies, of re-registration, a node rewritten by said re-registration means and a node
25 having a communication state managed by said communication management means.

54. The system according to claim 53, characterized

in that

said communication management means comprises a communication state write portion in which a node communication state can be written for each node

5 connected to the bus, and

said communication management means manages the node communication state by writing information of a communication partner node in the communication state write portion.

10 55. The system according to claim 54, characterized in that

the system further comprises confirmation means capable of confirming occurrence of bus reset on a bus connected to the communication partner node from the
15 node connected to the serial bus, and

if a node written when said re-registration means detects rewrite of the re-registration table in correspondence with detection of bus reset by said monitoring means corresponds to the node having the
20 communication state managed by said communication management means, said confirmation means rewrites node information of said communication management means in correspondence with re-registration, thereby enabling confirming occurrence of bus reset on the bus connected
25 to the communication partner node.

56. The system according to any one of claims 50 to 55, characterized in that the serial bridge comprises:

notification request reception means for receiving a notification request to a communication partner node from a node connected to a bus on which bus reset has occurred; and

- 5 notification means for notifying the communication partner node in accordance with the notification request from said notification request reception means.

57. The system according to any one of claims 50 to 10 56, characterized in that the serial bus includes an IEEE 1394 bus complying with IEEE 1394, and the serial bridge includes an IEEE 1394 bridge complying with IEEE 1394.

58. An information communication method in an 15 information communication system connectable via a serial bridge having portals respectively connected to different serial buses and a registration table for registering node information, characterized by comprising the steps of:

- 20 registering information of a connected node in addition to serial bus designating information in the registration table for each serial bus connected to the serial bridge, monitoring bus reset on the serial bus connected to each portal, when bus reset is detected, 25 rewriting, in accordance with newly updated node information, contents of the registration table corresponding to a serial bus on which bus reset is

detected, and updating the registration table, thereby enabling recognizing a change in system configuration.

59. The method according to claim 58, characterized in that the serial bus designating information includes
5 a bus ID assigned to each bus, and the node information includes a node ID assigned to each node.

60. The method according to claim 59, characterized in that the registration table registers, for each bus, all node IDs connected to the bus in association with a
10 bus ID.

61. The method according to any one of claims 58 to 60, characterized by further comprising the step of, when the serial bus detects a bus reset, notifying a node, which communicates with a node connected to the
15 serial bus on which the bus reset is detected, of the bus reset on the bus connected to the communication partner node.

62. The method according to claim 61, characterized in that the node connected to the serial bus registers
20 a node communication state capable of designating a communication partner in a serial bridge corresponding to the bus during communication with another node, thereby enabling managing the node communication state.

63. The method according to claim 62, characterized
25 in that the serial bridge rewrites, in accordance with a state after bus reset, a registration communication state of the node which communicates with the node

connected to the bus on which a bus reset has occurred, thereby enabling the connected node to confirm occurrence of the bus reset on the bus connected to the communication partner node.

5 64. The method according to any one of claims 58 to 63, characterized in that the serial bus includes an IEEE 1394 bus complying with IEEE 1394, and the serial bridge includes an IEEE 1394 bridge complying with IEEE 1394.

10 65. Computer program streams for a portal included in a serial bus bridge having at least two portals respectively connected to different serial buses, characterized in that said computer program streams enabling the portal;

15 detecting function of detecting a bus reset of a serial bus to which the portal is connected;

storage function of storing ID information designating a node on a network which comprises a plurality of serial buses, including serial buses to
20 which said portals are connected, interconnected via serial bus bridge(s);

receiving function of receiving a control message including the ID information designating a node on the network, wherein said control message further includes
25 a registration command or a deletion command;

wherein the portal stores the ID information in the control message by the storage function if received

control message includes the registration command, deletes the ID information from the storage of the storage function if received control message includes the deletion command; and

- 5 a transmitting function of transmitting a notice message including a bus ID information, designating a serial bus in which the detecting function detected a bus reset, to the node which is designated by the ID information stored by the storage function.

10 66. A computer-readable storage medium characterized by storing computer program streams according to claim 65.

67. Computer program streams for an information communication system connectable via a serial bridge
15 having portals respectively connected to different serial buses and a registration table for registering node information, characterized in that said computer program streams enabling the information communication system to perform the following operations;

- 20 registering information of a connected node in addition to serial bus designating information in the registration table for each serial bus connected to the serial bridge, monitoring bus reset on the serial bus connected to each portal, when bus reset is detected,
25 rewriting, in accordance with newly updated node information, contents of the registration table corresponding to a serial bus on which bus reset is

detected, and updating the registration table, thereby enabling recognizing a change in system configuration.

68. A computer-readable storage medium characterized by storing computer program streams according to claim

5 67.